



General

Guideline Title

Best evidence statement (BEST). Electronic reminders to address adherence.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BEST). Electronic reminders to address adherence. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2012 Mar 29. 6 p. [13 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of the evidence (1a to 5b) are defined at the end of the "Major Recommendations" field.

1. It is strongly recommended that electronic reminders such as text messaging be used to reduce no-show rates in the outpatient clinic (Guy et al., 2012 [1a]; Chen et al., 2008 [2a]; Leong et al., 2006 [2b]; Koshy, Car, & Majeed, 2008 [4a]; Foley & O'Neill, 2009 [4a]; Geraghty et al., 2008 [4a]; Ting et al., 2012 [2a]; Wei, Hollin, & Kachnowski, 2011 [5a]).
2. It is strongly recommended that electronic reminders such as text messaging be used with patients and families to positively impact behavior change and improve medication adherence (Cole-Lewis & Kershaw, 2010 [1a]; Krishna, Boren, & Balas, 2009 [1b]; Strandbygaard, Thomsen, & Backer, 2010 [2a]; Wei, Hollin, & Kachnowski, 2011 [5a]).

Note: To maintain confidentiality, do not share protected health information in text messaging (Leong et al., 2006 [2b]).

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain

4a or 4b Quality Level	Weak study design for domain Definition
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Table of Recommendation Strength

Strength	Definition
It is strongly recommended that... It is strongly recommended that... not...	There is consensus that benefits clearly outweigh risks and burdens (or vice versa for negative recommendations).
It is recommended that... It is recommended that... not...	There is consensus that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation...	

See the original guideline document for the dimensions used for judging the strength of the recommendation.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Conditions requiring medication adherence and attending outpatient appointments in pediatric patients

Guideline Category

Management

Clinical Specialty

Family Practice

Pediatrics

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To evaluate, among pediatric patients and families, if the use of electronic reminders such as text messaging versus standard care (no electronic reminders) improves adherence to taking medication and attending outpatient appointments

Target Population

Pediatric patients and their parents/guardians/caregivers

Interventions and Practices Considered

Electronic reminders such as text messages

Major Outcomes Considered

Adherence to taking medication and attending outpatient appointments

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search Strategy: The following words were used in the literature search: Asthma, medication adherence, electronic reminders, Reminder Systems/ or Cellular Phone/ or text message/ or Communication, Office Visits/ or Ambulatory Care/ or "Appointments and Schedules", SMS, Outpatient Appointment attendance, Pulmonary, Cystic fibrosis, Medical appointments

Databases: PubMed, Medline, Cochrane Collaboration, CINAHL Plus, Google Scholar, inquiry through National Association of Children's Hospitals and Related Institutions (NACHRI) listserv

Filters: Only articles in English were reviewed.

Date Range: 2006-2012

Last Search: 12/5/11

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Table of Recommendation Strength

Strength	Definition
It is strongly recommended that... It is strongly recommended that... not...	There is consensus that benefits clearly outweigh risks and burdens (or vice versa for negative recommendations).
It is recommended that... It is recommended that... not...	There is consensus that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation...	

See the original guideline document for the dimensions used for judging the strength of the recommendation.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

This Best Evidence Statement has been reviewed against quality criteria by 2 independent reviewers from the Cincinnati Children's Hospital Medical Center (CCHMC) Evidence Collaboration.

Evidence Supporting the Recommendations

References Supporting the Recommendations

Chen Z, Fang L, Chen L, Dai H. Comparison of SMS text messaging and phone reminder to improve attendance at a health promotion center: a randomized controlled trial. *J Zhejiang Univ Sci B*. 2008;9(1):34-8.

Cole-Lewis H, Kershaw T. Text messaging as a tool for behavior change in disease prevention and management. *Epidemiol Rev*. 2010 Apr;32(1):56-69. [66 references] [PubMed](#)

Foley J, O'Neill M. Use of mobile telephone short message service (SMS) as a reminder: the effect on patient attendance. *Eur Arch Paediatr Dent*. 2009 Jan;10(1):15-8. [PubMed](#)

Geraghty M, Glynn F, Amin M, Kinsella J. Patient mobile telephone 'text' reminder: a novel way to reduce non-attendance at the ENT outpatient clinic. *J Laryngol Otol*. 2008 Mar;122(3):296-8. [PubMed](#)

Guy R, Hocking J, Wand H, Stott S, Ali H, Kaldor J. How effective are short message service reminders at increasing clinic attendance? A meta-analysis and systematic review. *Health Serv Res*. 2012 Apr;47(2):614-32. [PubMed](#)

Koshy E, Car J, Majeed A. Effectiveness of mobile-phone short message service (SMS) reminders for ophthalmology outpatient appointments: observational study. *BMC Ophthalmol*. 2008;8:9. [PubMed](#)

Krishna S, Boren SA, Balas EA. Healthcare via cell phones: a systematic review. *Telemed J E Health*. 2009 Apr;15(3):231-40. [PubMed](#)

Leong KC, Chen W, Leong KW, Mastura I, Mimi O, Sheiki M, Zailinawati A, Ng C, Phua K, Teng C. The use of text messaging to improve attendance in primary care: a randomized controlled trial. *Fam Pract Adv Access*. 2006;23(6):699-705.

Strandbygaard U, Thomsen SF, Backer V. A daily SMS reminder increases adherence to asthma treatment: a three-month follow-up study. *Respir Med*. 2010 Feb;104(2):166-71. [PubMed](#)

Ting TV, Kudalkar D, Nelson S, Cortina S, Pendl J, Budhani S, Neville J, Taylor J, Huggins J, Drotar D, Brunner HI. Usefulness of cellular text messaging for improving adherence among adolescents and young adults with systemic lupus erythematosus. *J Rheumatol*. 2012 Jan;39(1):174-9. [PubMed](#)

Wei J, Hollin I, Kachnowski S. A review of the use of mobile phone text messaging in clinical and healthy behaviour interventions. *J Telemed*

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Improved adherence to taking medication and attending outpatient appointments

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Audit Criteria/Indicators

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2012 Mar 29

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

Cincinnati Children's Hospital Medical Center

Guideline Committee

Not stated

Composition of Group That Authored the Guideline

Group/Team Leader: Allison Whisenhunt, LISW-S, Social Worker III, Division of Pulmonary Medicine

Other group/team members: Mary Ellen Meier, MSN, RN, CPN, Evidence-Based Practice Mentor, Center for Professional Excellence-Research and Evidence-Based Practice

Financial Disclosures/Conflicts of Interest

No financial conflicts of interest were found.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the [Cincinnati Children's Hospital Medical Center Web site](#) .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Jan. 1 p. Available from the [Cincinnati Children's Hospital Medical Center Web site](#) .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 1 p. Available from the [Cincinnati Children's Hospital Medical Center Web site](#) .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Feb 29. 1 p. Available from the [Cincinnati Children's Hospital Medical Center Web site](#) .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

In addition, suggested process or outcome measures are available in the [original guideline document](#) .

Patient Resources

None available

NGC Status

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